

**Claims:**

- 1) A system for remotely controlling a locomotive, said system comprising:
  - 5 a) a remote control unit adapted for transmitting, during a first time interval, a remote control signal over a given communication channel;
  - b) a repeater module adapted for:
    - i) receiving the remote control signal transmitted over the given communication channel by the remote control unit;
    - 10 ii) processing the remote control signal to generate an amplified version of the remote control signal;
    - iii) transmitting the amplified version of the remote control signal over the given communication channel during a second time interval, the first time interval and the second time interval being non-overlapping;
  - 15 c) a trail controller positioned onboard the locomotive, said trail controller being adapted for receiving either one of the remote control signal and the amplified version of the remote control signal over the given communication channel.
  
- 2) A system as defined in claim 1, said given communication channel being a first
  - 20 communication channel, wherein:
    - a) said trail controller is adapted for transmitting, during a third time interval, a trail controller signal over a second communication channel distinct from the first communication channel;
    - b) said repeater module is adapted for:
      - 25 i) receiving the trail controller signal transmitted over the second communication channel by the trail controller;
      - ii) processing the trail controller signal transmitted over the second communication channel by the trail controller to generate an amplified version of the trail controller signal;
      - 30 iii) transmitting the amplified version of the trail controller signal over the second communication channel during a fourth time interval, the third time interval and the fourth time interval being non-overlapping;

- c) said remote control unit being adapted for receiving either one of the trail controller signal and the amplified version of the trail controller signal over the second communication channel.
- 5 3) A system as defined in claim 2, wherein the first time interval is overlapping at least in part with either one of the third time interval and the fourth time interval.
- 4) A system as defined in claim 2, wherein the second time interval is overlapping at least in part with either one of the third time interval and the fourth time interval.
- 10 5) A system as defined in claim 1, wherein the given communication channel is a radio frequency channel.
- 6) A system as defined in claim 2, wherein the first communication channel and the second  
15 communication channel are radio frequency channels.
- 7) A system as defined in claim 1, comprising a plurality of remote control units adapted for transmitting remote control signals over the given communication channel, the remote control being assigned respective time sub-intervals of the first time interval, the time  
20 sub-intervals being non-overlapping with one another.
- 8) A system as defined in claim 1, comprising a plurality of repeater modules adapted for:
- i) receiving remote control signals transmitted over the given communication channel;
- 25 ii) re-transmitting the remote control signals over the given communication channel, the repeaters being assigned respective time sub-intervals of the second time interval, the time sub-intervals of the second time interval being non-overlapping with one another.
- 30 9) A system for remotely controlling a locomotive, said system comprising:

- a) a trail controller positioned onboard the locomotive, said trail controller being adapted for transmitting, during a first time interval, a trail controller signal over a given communication channel;
- b) a repeater module adapted for:
  - 5       i)       receiving the trail controller signal transmitted over the given communication channel by the trail controller;
  - ii)      processing the trail controller signal to generate an amplified version of the trail controller signal;
  - iii)     transmitting the amplified version of the trail controller signal over the given communication channel during a second time interval, the first time interval and the second time interval being non-overlapping;
- c) a remote control unit adapted for receiving either one of the trail controller signal and the amplified version of the trail controller signal over the given communication channel.

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10) A system as defined in claim 9, wherein the given communication channel is a radio frequency channel.

- 11) A method for assigning time intervals to communication components in a locomotive remote control system, the time intervals indicating time segments during which a communication component is permitted to transmit a signal over a communication channel, said method comprising:
  - a) assigning a first time interval to a remote control unit for transmission of remote control signals over a first communication channel;
  - 25       b) assigning a second time interval to a repeater module for transmission of remote control signals over the first communication channel, the first time interval and the second time interval being non-overlapping;
  - c) assigning a third time interval to a trail controller mounted onboard the locomotive for transmission of trail controller signals over a second communication channel distinct from the first communication channel;

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d) assigning a fourth time interval to the repeater module for transmission of trail controller signals over the second communication channel, the third time interval and the fourth time interval being non-overlapping.

5 12) A system as defined in claim 11, wherein either one of the first time interval and the second time interval is overlapping at least in part with either one of the third time interval and the fourth time interval.

10 13) A system as defined in claim 11, wherein the first and second communication channels are distinct radio frequency channels.

14) A method as defined in claim 12, said method further comprising assigning respective time sub-intervals of said first time interval to a plurality of remote control units, each remote control unit being adapted for transmitting remote control signals over the first  
15 communication channel during its respective time sub-interval, the time sub-intervals being non-overlapping with one another.

15) A method as defined in claim 14, said method further comprising, assigning respective sub-intervals of said third time interval to a plurality of trail controllers mounted onboard  
20 respective locomotives, each trail controller being adapted for transmitting trail controller signals over the second communication channel during its respective time sub-interval, the time sub-intervals of the third time interval being non-overlapping with one another.

16) A method as defined in claim 12, said method further comprising assigning respective  
25 time sub-intervals of said second time interval to a plurality of repeater modules, each repeater module being adapted for transmitting remote control signals over the first communication channel during its respective time sub-interval, the time sub-intervals being non-overlapping with one another.

30 17) A method as defined in claim 11, wherein the first time interval is assigned manually.

18) A method as defined in claim 11, wherein the first, second, third and fourth time intervals are measured with respect to a reference clock.

5 19) A method as defined in claim 18, wherein the reference clock is derived in the basis of a GPS system.

10 20) A method for assigning time intervals to communication components in a locomotive remote control system, the time intervals indicating time segments during which a communication component is permitted to transmit a signal over a communication channel, said method comprising:

- 15 a) assigning a first time interval to a remote control unit for transmission of remote control signals over a first communication channel to a trail controller positioned onboard a locomotive;
- b) assigning a second time interval to a repeater module for transmission of remote control signals over the first communication channel to the trail controller positioned onboard a locomotive, the first time interval and the second time interval being non-overlapping.